Facebook for adults ? A longitudinal study of MBA student's use of an enterprise social network for collaborative learning

The rapid pace of social media means that our understanding of the way in which it facilitates the learning process continues to lag. The findings of a longitudinal study of an executive MBA cohort over the period of eight months in their use of the social media application is presented. Over time the ownership and use of the Yammer site shifted to become student driven and facilitated. The motivations behind the site's use, perceived advantages and disadvantages and changes in usage patterns are documented. The case provides a useful insight into the way in which students used this technology to facilitate their learning goals and how patterns of behaviour changed in response to the changing needs of the cohort.

Keywords: Social media; constructivism; technology adoption; Yammer

The rapid pace of technological development has naturally led to the adoption and use of social media far in advance of the conceptual and empirical knowledge as to how this technology assists in student learning and development (Brown, 2012). Indeed, one could make the strong argument that we remain without a clear understanding of how these technology types are actually used by students in a educational context (Benson, Morgan & Tennakoon, 2012). Some have considered from a theoretical perspective the role of social media technologies or simply the "social" phenomena in the context of learning theories such as social constructivism or newly emerging variants such as social connectivism (Bell, 2011; Boitshwarelo, 2011) however empirical investigations remain in an emergent phase, with many researchers still coming to grips with what the technology actually is, what it isn't, and its potential role in an educational context (Hrastinski & Dennen, 2012). Consequently the literature to date presents with two major failings. One, while there is a significant amount of discussion as to the potential use of social media in a tertiary environment, these is very little knowledge as to how students actually utilise and incorporate this technology type into their capacity as students (Guy, 2012). Compounding this is the second problem, whereby consistent with Orlikowski & Iacono's (2001) observations researchers to date have had the unfortunate tendency to

treat social media as a single entity, with little attention paid to the broad design variations within this particular class of software applications (Wodziki, Schwammlein & Moskaliuk, 2012).

This paper presents the findings of a longitudinal study investigating the use by executive MBA students of an enterprise social media application called Yammer. Using site traffic data the study investigated the manner in which the site was used by students and identified whether there were any changes in usage patterns over an eight month period. The study found evidence of seven distinct ways in which students used the site and identified five key phases of user behaviour and site usage over time. The paper briefly reviews the literature pertaining to the use of social media in tertiary education and sets out the research aims of the study before presenting discussing the findings.

Social Media Application Use in Education Contexts

The term "social media" has become a popular catch-all phrase to describe a diverse range of software applications, however a consistent theme among social media applications is that they are designed to link individuals and communities in a way that is acceptable to the user's lifestyle or particular needs (Murphy & Salomone, 2013). Further, they usually allow some flexibility in the way in which they allow users to share and transfer knowledge, data or information in multiple formats, and typically allow synchronous or asynchronous interactions to be determined by the user. Outcomes attributed to the emergence of social media have been both wide-ranging and significant with its purported effects ranging from societal upheaval and revolution (Bruns, Highfield & Burgess, 2013) to concerns around changing individual interaction patterns among youth (Rainie & Wellman, 2012). Unsurprisingly its effect has also been noted in educational settings, and theories such as social connectivism have increasingly gained attention as the links between mobile computing, technology facilitated social interaction and a desire for more flexible learning have become more salient in the minds of both students and educators (Bell, 2011). Thompson (2011, 194) provides evidence of this, highlighting an emerging, increasing preference for a complex interconnected network of information sources constructed by the learner and reflecting a "*mix of individual and collective, close and distant, formal and informal learning spaces*".

The emphasis of social media on connectivity and the sharing of experiences, knowledge and personal identities lends itself well then to the theoretical constructs underpinning social

constructivism theory. Social constructivism makes the argument that learners engage in processes and activities that allow them to build knowledge based upon their existing knowledge rather than being a passive recipient in the learning process (Wang, 2011). Further, proponents of constructivism contend that this optimised learning occurs when opportunities for learning are provided via social interaction, observation of others or as a result of dialogue relating to specific problems or topics of focus (Chen & Bryer, 2012). As such, collaboration is seen as an essential element in the generation of meaningful and individualised knowledge (Caballe & Xhafe, 2010). In the context of social constructivism then the attraction of a technology type such as social media becomes obvious. Utilised in the appropriate manner social media tools provide educators with a tool and a dynamic framework that allows students to interact, generate ideas and content and engage in the learning activity in a way that suits their particular learning style, personal situation and lifestyle demands and even geographical location (Guy, 2012).

Unsurprisingly given its market leading status and rapid uptake by the 18-34 year age group much of the discussion in relation to the use of social media in the tertiary education environment has focused on the use of the social media application, FaceBook (e.g. Leitch & Warren, 2011; Munoz, 2010; Tuten & Marks, 2012). Arguably the most popular and most successful social media application Facebook was released in 2004 and to date boasts over 800 million active users. The use of Facebook by educators has been proven to be a useful tool for a number of aims including the handling of student enquiries, as a broadcast announcement tool and even assessment (Foroughi, 2011). For example, Backer (2010) reported an overall positive response from students required to undertake a piece of assessment using Facebook on their smart-phones with students reporting increased perceptions of independent learning and felt responsibility .

However, as social media applications have matured, certain applications can be seen to be better suited to particular tasks than others (Murphy & Salomone, 2013). Reflecting this Boateng, Malik & Mbarika (2009) offer a typology indicating that social media applications can achieve one or more functional outcomes including the i) communication of information (*Communicative*) and or ii) generation of knowledge (*Generative*), iii) provide a vehicle for collaborative publishing, iv) act as a content management space, and v) an interactive hub that allows individuals to share and exchange thoughts, information and ideas. Therefore while it might be useful to talk in general terms about the

impact of social media on the education sector, and student outcomes such as increased engagement and improved learning outcomes, in order to effectively determine the utility of this software type it is important to acknowledge the technology artifact and its inherent functionality (Orlikowski & Iacono, 2001). This is compounded by the fact that very few studies actually examine the way in which students use social media in the context of their entire student life. As discussed, some have adopted a narrow focus on a specified activity such as an assessment piece or in the context of student enquiries while others have focused their attentions on a specific application, typically Facebook or Twitter. By their nature these applications are limited in their scope as defined by Boateng et al. (2009) typically limited to communicative and/or interactive functionality. There are also very few detailed studies of how students fully utilise social media applications in the context of their learning activities, especially outside of the classroom environment and over a significant period of time. For example Luo & Gao (2012) examined the use of micro-blogging via a Twitteresque (Twiducate) tool in a structured set of classroom activities. While a useful exercise, the highly structured and directive nature of the activity failed to capture faithfully the types of behavior typically associated with social media use. Vorvoreanu, Bowen & Laux (2012) used Yammer in a large undergraduate course for the last three weeks of a semester and noted a decrease in positive attitudes to the course. This was attributed to the late introduction of Yammer into the course that artificially disrupted established patterns of interaction. It is also considered possible that the short timeframe prevented the development and embedding of any new Yammer facilitated interaction patterns. Finally, while Taylor, King & Nelson (2012) found student's perceptions of the use of social media in a teaching and learning context to be positive, they were unable to demonstrate how students actually utilised the technology to facilitate any learning outcomes.

Therefore while it appears that the potential for certain social media applications to facilitate the aims and objectives of constructivism does exist, we continue to have little of how students use these applications in an learning and development context. The literature also tends to continue to treat these tools in a generic fashion, or focus on one or two popular tools (e.g. Twitter and Facebook) without recognising their inherent variability and how their differences might result in different usage patterns and learning outcomes. In order to effectively use this technology type in ways that are acceptable for learners and educators we must develop a deeper understanding of both the technology

in question and more importantly the way in which students interpret, use and ultimately benefit from social media in its varied forms.

Research Aims

Much like McCorkle & McCorkle (2012) this study emerged out of a practical classroom application, with the intent of the author to provide a flexible way in which to communicate and disseminate material to a cohort of Executive MBA students. Yammer was viewed by the unit co-ordinator as an effective way to communicate responses to student queries (by email) that might have also been useful to the rest of the cohort. Rather than use a social network site such as Facebook, the use of Yammer was thought to have the potential to overcome some of the security, privacy and general use concerns posed by Facebook, particularly in the context of executive and professional people reflected in the cohort demographics (Willems & Bateman, 2011).

Yammer's functionality also allowed the unit co-ordinator with an efficient tool to forward material designed to push to those in the cohort that were looking for material to extend their thinking, provide additional examples of theoretical applications or content that followed up on discussions and queries that had emerged in previous lectures or workshops. These included links to appropriate articles of an academic nature, professional publications or contemporary news sites and /or blogs as well as video material. Yammer also allowed the co-ordinator to post images of theoretical models or diagrams, quick opinion "polls" around a topic area and post calendar reminders of assessment due dates and the like. Yammer was used in parallel with the conventional LMS that was mandated by the University that housed all of the typical standard resources such as lecture slides, assessment details and set readings.

Over time it became apparent that the way in which the students interpreted and used the site changed and evolved over time and as such represented an opportunity to longitudinally investigate the use of a social media application by students in a learning and development context. In essence, prior to undertaking a more comprehensive review of the Yammer interactions the research questions posed were:

1. *What were the specific ways in which students utilised the Yammer social network in the context of their university experience?*
2. *Were there distinct changes in student's use of Yammer over the life of the cohort?*

3. Method / Data source

The major data source used to inform this study was a textual analysis of the Yammer site user traffic. The Yammer interaction data was interrogated to determine the primary uses of the site by the cohort and to examine any trends in usage patterns. The Yammer data was analyzed by replicating a process used by Riemer, Scifleet & Reddig (2012) in their study of Yammer in a professional services firm, which utilized a form of thematic analysis termed genre analysis (Westman & Freund, 2010) to categorize the various interactions observed. In this approach "genres" are conceptualized as communication patterns that develop over time and are reflective of a particular type of social activity. Consistent with Riemer et al. (2012) each posting was classified according to its collective purpose, as to how the cohort community would have perceived the intent and purpose of the posting. For example, postings might relate to unit assessment, unit content, social activity, "professional" or aspects of university life. Each initial posting was used as an individual data point and clustered into like categories and progressively reviewed to examine whether those clusters could be more narrowly defined while still remaining a conceptually different "intent and purpose" that the collection of postings would reflect. A number of descriptive metrics were also captured including: total number of interactions; interactions per month; interactions per category; and interactions per category per month.

The participants were an Executive Masters of Business Administration (EMBA) at a large Australian University. The students were a cohort in the classic sense in that over an 18-24 month period they moved through a set program of units and complete the program together. Thirty-one students originally made up the cohort with five females, twenty-six males and median age of thirty-seven. The group was professionally diverse with a number of managing directors, financial managers, project managers, senior information technology and engineering professionals as well as experienced sales and marketing managers. At the time the data collection for this study began the cohort had just entered the program and were not known to each other prior to taking the course. While all participants described themselves as having a high/moderate/low level of computer literacy and proficiency, none had experience using Yammer prior to joining the course.

4. Results

In the eight months that were analyzed 320 individual *postings* and a total of 1265 *comments* submitted in response to those postings (mean=3.85 responses per posting) were identified. Of those postings 57 (17.8%) were facilitator postings. Figure 1.0 below indicates that after an initial spike in postings (n=60 per month) in the second month of operation, posting frequency dropped (n= 27) but steadily trended upward from that point as the cohort progressed through their degree (mean = 33.33 per month). Further analysis of the Yammer data identified seven distinct genres that faithfully captured the various ways in which the cohort utilized the Yammer site. The unit of analysis reported relates to initial postings by users, as a review of the comments in response to initial posting were all consistent with the original post. The seven main genre's were i) assessment related interactions (for an example see Figure 2.0 below), ii) course content related interactions, iii) general MBA activity (for an example see Figure 3.0 below), iv) social activity, v) "Work Product" sharing, vi) content & material sharing, and vii) "crowd sourcing" queries (for an example see Figure 4.0 below). Detail relating to each of these areas presented in Table 1.0 below

User Behaviour - Lifecycle

While the genre analysis provides a useful insight into the type of uses the cohort used Yammer for it is also useful to consider how the use of Yammer may have changed over time. In the first instance each genre was mapped out per month according to posting frequency, this is represented in Figure 5.0 below.

Postings relating to *Assessment* (ASS) steadily decreased over the period consistent with the idea that the cohort became more proficient and confident in their studies and matured in their approach to undertaking assessment pieces independently. Postings relating to *MBA life* (MBA) increase towards the middle of the year, and along with *Social* account for a high proportion of traffic towards the end of the data collection period. Much of the explanation for this increase can be explained by the cohort's increasing embeddedness in the course, an increase in MBA related activity organized by the university (professional gatherings, seminars, professional development activities) and a shift in focus away from course content and assessment to other aspects of MBA and university life. The *Material sharing* (MAT) genre on the whole can be seen to decrease over the data collection period with a

spike in July, attributed to the cohort having five subjects running concurrently in comparison to the typical three or four. The genres associated with *Work sharing* (WOrK) *Course content* (CON) and *Social* (SOC) all followed similar patterns of posting frequency over the year with moderate to low postings throughout the period. The spike in posting for *Social* in November reflects a shift within the cohort to discussing end-of-year celebrations and gatherings of a social nature at the conclusion of the academic year. Those that stand out in the changing nature of frequency are the *MBA life* and *Social* (SOC) genres. These two increased on average in frequency with the remaining genres (all those typically associated with scholastic type activities) all identified as steadily decreasing over the data collection period.

However, what the Yammer posting frequency data on its own fails to highlight is the shifting nature of ownership that occurred, particularly in the early phase of the site's use. In a very short period of time the instructor began to "lose" ownership of the site as the cohort increasingly directed and controlled the flow of information within the site. In summary, a time-based analysis of the cohort's overall pattern of Yammer interactions indicated five key phases over the period investigated (see Figure 6.0 below).

Phase 1 (Weeks 1-2) - *Broadcast communication and extension of learning:* As alluded to already, the origins of the Yammer site were aligned with the subject co-ordinator wishing to utilise an efficient manner in which to answer queries and to quickly build cohort awareness. In the first week of the site the majority of posts were either from the instructor or queries directed to the instructor. Posts were concerned with clarifying assessment requirements, the provision of additional content or examples of material that had been covered in class previously. As to be expected in this initial phase it was the instructor responding and answering to posts with little or no additional interaction from the cohort.

Phase 2 (Weeks 2 onward) - *Cohort Interaction & response:* As the previous data has shown (see Fig. 2.0) content and assessment based queries continued for the eight month data collection period. However, a change that was identified as early as the second week of use was the responses of cohort members to queries posted to the instructor. In the majority of cases the cohort were responding in a more timely manner than the instructor was able to and importantly, with an appropriate and correct answer. In many instances all the instructor was required to do was to confirm the information as

correct or in some rare instances provide a clarification or refinement of the cohort response. It was this initial pro-active behaviour by cohort members that offered an indication that the use of Yammer may offer students more in the way of a learning experience above and beyond the simple broadcasting of content.

Phase 3 (weeks 3 onward) - *Cohort self direction:* A number of postings were observed at the third week that were considered especially significant in the evolving nature of how Yammer was being used by the cohort. The first was that while the Yammer site had been specifically set up for the auspices of their "Strategic Management" subject students began posting and discussing other subjects that they were also involved in. At this point it was apparent that any "control" or ownership held by the author as the Strategy unit co-ordinator was reduced and that the cohort themselves were using the site in a manner that best suited their needs. The second significant aspect to emerge was that cohort members began to post drafts of their work up onto Yammer for public comment. This development was unexpected and considered to be a tangible example of the potential learning scenarios discussed in the context of constructivism and connectivism. As the frequency data reported above demonstrates sharing of work content was not especially frequent over the life of the data collection but the fact that it actually occurred fairly early on, and continued to do so was considered important from a learning and pedagogical perspective.

Phase 4 (weeks 3-4) - *Professional - social transition:* By the end of the third week and into the fourth week a review of the postings indicated a full range of genres in evidence. While postings up until this point had been largely content and assessment related postings relating to social activities, MBA life and broader, more involved discussions were evident.

Phase 5 (week 12) - *Site ownership & continuation:* Approximately three months after the site was established a number of cohort members requested that the site be renamed from its original title of "EMBA Strategic Management" to a general EMBA cohort Yammer site. People were concerned that at the conclusion of their Strategic Management studies they would lose the use of the Yammer platform, and expressed a desire to continue the Yammer site as the central communication hub for the cohort through their degree. There were also calls for various other faculty members to be added to the site and encouraged to participate in its use. This was considered significant in that it indicated that for some users at least the space was considered valuable beyond the original context within

which it originated. Another perhaps more important point is that at this juncture ownership clearly transitioned over to the cohort, despite staff members remaining as site administrators. This development, while welcomed was unexpected as it had not been an intended aim of setting up the Yammer site in the first instance.

Discussion

Initially Yammer was introduced into the course as a fairly blunt instrument, as a way in which the instructor/facilitator could quickly and easily "push" content onto those students looking for additional examples and guidance with content and assessment. It was also seen as a way of maintaining contact and developing a relationship with a group that was only seen once every 4-6 weeks. A good example of a enterprise collaboration tool Yammer allowed the posting of comments, additional content in a variety of formats (video, text, pictures, diagrams) run quizzes or polls and gain responses from students in a synchronous manner. For this purpose Yammer worked extremely well and allowed the sharing of queries and responses for individuals to the entire group - simultaneously reducing the number of queries and building the knowledge and capability of the cohort. However, it is the extent to which the group themselves actually "took ownership" of the Yammer site that was worthy of greater consideration and investigation. As students quickly became more confident with the use of the site they began posting drafts of assessment for comment by the group, would advise each other on queries (often responding quicker than the instructor was able) and posting content of interest and relevance to the unit content that they had found in the course of their research.

The observation of this user behaviour prompted the two research questions of i) *what were the specific ways in which students utilised the Yammer social network in the context of their university experience? and* ii) *were there distinct changes in student's use of Yammer over the life of the cohort?*

In terms of the first research question the data suggests the student's use of Yammer was varied and changed over the course of the eight month period. Seven distinct uses of the site were identified, and while some social activity was to be expected it actually only represented 16% of total interactions. Instead evidence was recorded of scholarly and academic activity across a number of areas including the sharing of additional (student sourced) material (24%), the peer-review of

assessment drafts and knowledge sharing pertaining to course (EMBA activities) (5%). As such the study provides evidence of what de Laat (2011) describes as a distinct move by learners towards networked learning activities facilitated by information and communication technologies (ICTs) with the intent of collaborating and cooperating with other learners, instructors or other learning resources. This study, along with de Laat's (2011) work also reflects the growing recognition amongst others that learners have some degree of agency in the way in which they construct their social infrastructure to inform their day-to-day actions as well as their professional standing and development (Sharma, et al., 2010). At the very core of constructivism are the principles of learning through experimentation and dialogue (Adams, 2006). Again the data provided here indicates that given the appropriate opportunity and mechanism students will engage in this process. However, it also highlights the alternate role needing to be played by educators with social media applications in a learning context, clearly putting the instructor in a facilitating, rather than a directive role. An important learning for educators is that despite your intent as to how a particular technological artifact may be introduced (depending on the application) student's will adapt the technology to suit themselves. That acknowledged, it also confirms that with careful scaffolding students can be guided and encouraged to explore the full range of functionality and use within a particular application (Luo & Gao (2012).

This study also demonstrates that student interaction and collaboration via a social media application can be sustained over an extended period of time, but the nature of use may evolve or change depending on the needs of the group. It would have been reasonable to expect that after an initial flurry of activity use of Yammer would have dropped, especially once the unit that it was introduced into was completed. In response to the second research question two key elements were identified. One, that there were specific phases in the nature of the relationship between the use of the technology and the cohort. One notable observation was the speed by which the students adopted the site. As discussed, within two weeks of use students had transitioned from being passive consumers of material posted by the instructor to engaging, sharing and contributing to the material, the majority of which was scholastic in nature.

It was also noted that the way in which it was used varied depending on the needs at any one particular time - this was most evident towards the later part of the course when postings increased significantly when discussing their impending study tour. An interesting side note, but possibly one

of the most valuable insights relates to the nature of the group's interaction patterns prior to using Yammer and its impact on the adoption of new social technologies. Originally it was the intent of the author to capture data from two separate cohorts in their use of Yammer - the "new" cohort reported here in this paper (COHORT A) and an "old" cohort that were some way through the completion of their degree (COHORT B). In short COHORT B had no use for the Yammer site set up for them, with almost no interaction on the site and what interaction there was, being of a social nature. Informal discussions with COHORT B members indicated that as the group had already been together for twelve months they already had established preferred and embedded methods of communication between each other. The cohort's existing work-flows and communication processes meant that adopting Yammer at that point was perceived to be un-economical and offered little additional value. This mirrored the authors previous experiences attempting to establish Yammer sites with experienced researchers and academics for project co-ordination. In these instances e-mail was the preferred form of communication and the use of Yammer, despite its numerous advantages over e-mail failed to be adopted in three separate instances. This contrasts heavily with the experience of COHORT A reported here in this paper, where the cohort enthusiastically adopted the technology for a variety of uses over a sustained period. It is possible that the complete lack of established relationships and interaction preferences within the "new" cohort allowed and facilitated the adoption of Yammer. Future research would benefit i) to confirm whether the presence of existing interactions (however inefficient) work to prevent the adoption of social media technologies for knowledge sharing, and ii) to determine the most appropriate methods to undertake to help users unlearn old approaches to collaboration and adopt new approaches (Dunlap & Lowenthal, In-press). This is particularly relevant in an education setting where it is possible that groups of students become familiar with one or two preferred methods of interaction (e.g. an existing LMS; email) despite emerging technologies offering significantly enhanced learning opportunities if adopted.

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FIGURES.

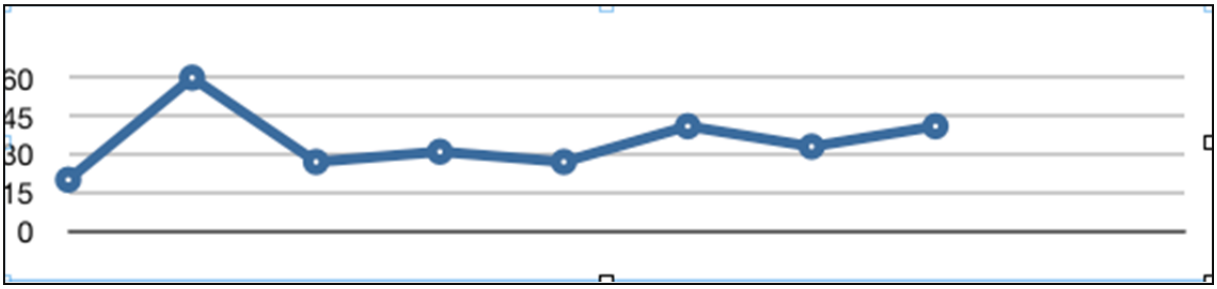

Figure 1.0 **Cohort Yammer postings per month**

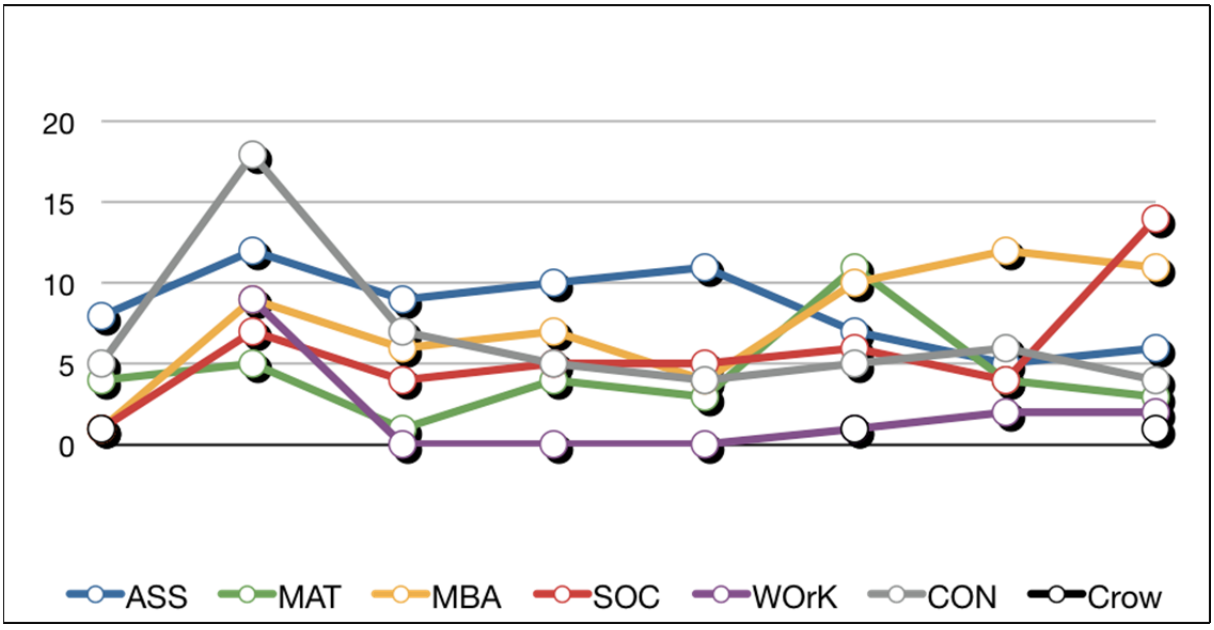

Figure 5.0 **Yammer postings by Genre per month**

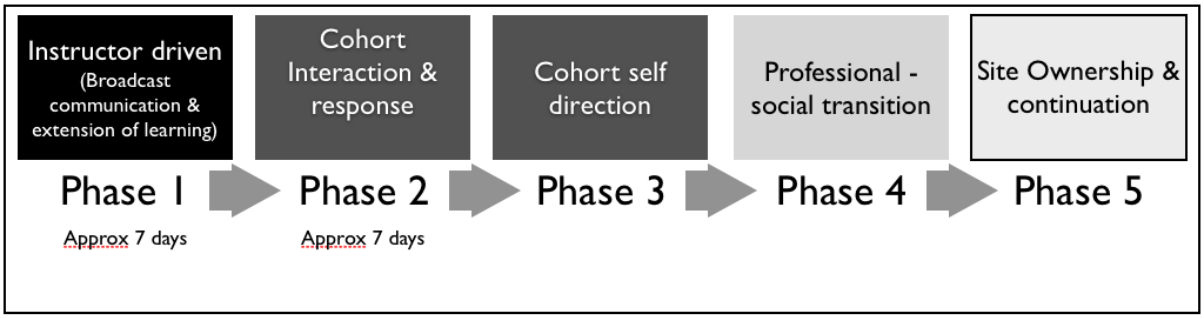

Figure 6.0 **Cohort Yammer behavior lifecycle**

Figure 2.0 **Assessment genre related posting and discussion**

Figure 3.0 **Example "General MBA Activity" posting and discussion**

Figure 4.0 **Example crowdsourcing query**

TABLES

Assessment related interactions *(24%)*	These interactions were identified as those that specifically related to the course assessment set for the students. Postings in this genre typically related to clarifications around assessment requirements, requests for assessment specific resources (case readings, marking rubrics etc.), and in some instances requests for help. A frequent type of posting concerned the release of results, when they were due and if "*anyone else has had their results back yet?*".
General MBA activity *(23%)*:	This genre collectively represented those postings that related to the student's involvement in the EMBA community and aspects of university life that were not directly related to any specific subject they were enrolled in at the time. Examples of postings included in this genre were discussions around "masterclass seminars", general administrative matters, EMBA related travel plans, study group announcements and comments relating to the demands and pressures of the EMBA lifestyle. This genre was the second most frequently posted interaction over the time period (23%) and one of the categories that continued to trend upward over the life of the cohort.
Content & material sharing *(18%)*:	This genre emerged to reflect the trend within the site for cohort members to share content that was associated with the content and topics they were studying, but not directly related to their required readings or lecture material. Often the material that was shared reflected an attempt to foster an extension of learning, such as posting an interesting article or blog post that had been found during their research, an alternate model, news items or content that put the theory they were learning into a contemporary business situation or an alternate context.
Social activity *(16%)*:	Another genre that reported a relatively high frequency were those postings of a social nature. These postings related to activities that involved the cohort but were not related to any scholastic or administrative aspect of their MBA degree. This involved postings such as those notifying the group of social dinner and drinks, humorous cohort related postings and invitations to support or join charitable initiatives that cohort members were involved in. This was another of the genres that reported a general upward trend in frequency over the life of the study.
Course content related interactions *(12%)*	Postings consistent with this genre were directly related to course content such as posting queries about required readings, questions as to class activities, workshop exercises and the like. This genre only represented only twelve percent of the total postings which is perhaps reflective of a mature and well maintained university LMS that provides students with all the required subject resources.
"Work Product" sharing *(5%)*:	Another smaller, but distinct genre to emerge from an analysis of the postings related to instances where students would post examples of work in progress, or drafts of assessment for their peers to review and make comment on. Examples of work in progress typically were posted in the form of photographs of white-board workings with drafts whereas assignment drafts were shared as PDF files.
"Crowd sourcing" queries *(2%)*	A small but distinct proportion of queries (2%) related to what are typically described as "crowd sourcing" interactions (Brabham, 2008) where students used Yammer to source information, advice or access to resources with an aim to furthering their own private business interests or professional / job related demands outside of the MBA.

Table 1.0 **Yammer interactions by genre**